DOCUMENT RESUME

ED 172 411 EA 011 843

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TITLE Teaching and Curriculum Organisation in British Open Plan Schools.
PUB DATE Apr 79
NOTE 20p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, California, April 4-8, 1979); Not available in paper copy due to light print of original document

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Classroom Design; Curriculum Design; Elementary Education; Foreign Countries; National Surveys; *Open Plan Schools; *School Design; *Time Factors (Learning)
IDENTIFIERS Great Britain; *Open Plan Schools Inquiry

ABSTRACT

The data discussed in this speech are taken from a large, three-year study that investigated the whole process of open-plan schooling. The study included a national survey of schools in Britain and a series of onsite observations. The analyses reported here derived from the observation of 552 pupils in grades 2 and 4 using the Pupil Behavior Schedule. The main areas of concern were curriculum allocation, which is the opportunity teachers provide for pupils to study a given curriculum content, and pupil involvement, which represents what pupils make of that opportunity. Large variations were found in the curriculum allocation between units. It is pointed out, however, that such variations are not limited to open-plan schools. The findings on pupil involvement can be interpreted in a number of ways. One might argue that pupils are involved for nearly two-thirds of the week, whereas another might complain that, on the basis of these figures, 9 of the 25 hours a week spent at school are devoted to noncurricular activities. It is of interest that some teachers manage to keep their pupils involved for 19 hours a week and others for only 13. (Author/IRT)

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TEACHING AND CURRICULUM ORGANISATION IN BRITISH OPEN PLAN SCHOOLS

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Introduction

The growth in the number of open plan (space) elementary schools over the last decade or so is a worldwide phenomenon. Brunetti (1971) for example reported that of the elementary schools built in the United States in 1967-1969 all but 9% were of open design. In Britain the number of such schools has increased yearly since the middle sixties such that they now comprise 10% of all schools. And in New Zealand, where the first school was built as recently as 1970, one pupil in twelve is taught in open space (New Zealand, 1977).

In tracing the origins of open planning in Britain there appears to have been a clear educational rationale. Such schools were designed to mirror the flexibility perceived in contemporary teaching methods, i.e. to provide a match between the built environment and what educators and architects perceived as a significant shift in primary school teaching. However, the main basis for their continued development since the late sixties has been an economic one. Architects argue that they cannot now design a conventional school under current cost limits and such a school has been a rarity for the past eight years.

Open planning represents a significant innovation in primary education but one which has attracted no systematic evaluation. Development was quick but haphazard and fragmented whereas research was slow, small and inadequately conceptualised. It therefore provided no counterbalance to the general literature surrounding the innovation which presented according to Gray (1976), an unquestioned plethora of philosophical beliefs, given as reasons, for building such schools.

The study

The Open Plan Schools Inquiry was funded for three years commencing in 1975 to investigate the whole process of open plan schooling from the perspectives

of architect, adviser/administrator, teachers and pupils. It was to consider carefully both the design and teaching process and highlight successes and diagnose problems and how they might be overcome. Essentially we were to collect accurate and relevant information from a number of sources and perspectives to feed back to interested parties in the hope that it would increase sensitivity and awareness to issues and be used as the basis for future policy and action.

Such a brief required a multi-method approach and this is shown in simplified form in figure 1.

(Fig. 1. here).

The study can be considered in three stages. Familiarisation; Questionnaire Survey and Observation.

Previous small scale research (Bennett, et al. 1974) had indicated that the term open plan was a misnomer in the sense that it implied homogeneity whereas heterogeneity appeared to be the rule. Such schools vary enormously in size, type and orientation of space in addition to marked variations in teaching approach. Familiarisation with such diversity on a national scale was thus considered essential prior to the main study. Three months were therefore spent visiting schools in 27 local Education Authorities observing practice and interviewing teachers, advisers and architects. In addition teacher groups were set up in various parts of the country to discuss specific issues, evaluate pilot instruments and provide feedback.

This familiarisation stage was invaluable in allowing an adequate conceptualizati of the complex issues involved. It provided a solid factual base for the design of the questionnaires and, as important, enabled the development of a classification scheme of school designs. Previous studies have totally disregarded differences in school design but it became apparent during the familiarisation stage that certain organisational features appeared to vary systematically with the amount of shared teaching space and the size of the teaching unit.

In classifying teaching units two dimensions were used to account for differences in size and type of shared facility. These were a) the number of teachers the

unit was designed for and b) the amount of shared space. These allowed for an eight-fold classification.

Number of teachers designed for 1) two
2) three
3) four
4) five or more.

Amount and type of shared space 1) shared teaching space available in addition to shared practical/wet area and/or enclosed areas such as quiet rooms (Type 1)

2) shared practical and/or enclosed area but no shared teaching space (Type 2).

The simplified plans in figs. 2 and 3 serve to highlight the use of the scheme.

(fig. 2 here)

Figure 2 shows an infant unit designed for three teachers and 120 pupils comprising three home bases, a shared tiled practical/wet area together with two shared enclosures designated by the architect as a study and a group room. Although each teacher has a claim on a corner of each home base for registration and so on the remainder of the home base space is shared teaching space (whether or not it is actually used as such depends on the teachers). The availability of shared teaching space qualifies this as a type 1 unit, the full classification being a three teacher or triple type 1.

(fig. 3 here)

The school in figure 3 is also designed for three teachers but here each teacher occupies a bay of near classroom size. Each bay opens directly on to the shared wet area and all share one quiet room. There is no shared teaching space available and it is classified triple type 2.

This classification scheme, although fairly coarse, was felt by teachers and

architects to be valid and was used to classify all the school plans which were requested with the questionnaire returns. The analyses indicated that the popular stereotype of open plan schools as large barn-like structures is far from reality in Britain. Over half of all units were designed for two teachers, and another quarter for three teachers. More type 2 designs were evident than type 1.

The familiarisation stage was followed by a national questionnaire survey in which a census was taken of headteachers together with all teachers in a one in three random selection of schools. Response rate was in excess of 75% giving a data sample of 1592 headteachers and 4363 teachers.

The items relating to teaching and curriculum organisation were derived directly from observed practice in the familiarisation visits, together with interviews with advisers and discussions with teacher groups. Eight teaching organisations were identified which fell on an Independent-Cooperative teaching dimension. At one end was the teacher who taught on her own as she would in a classroom box, and at the other end teachers who spent much of their day in cooperative/team teaching situations. The responses show that many more teachers teach independently or cooperate minimally than team teach. Only one in five teachers claimed to be team teaching. There were however interesting differences in relation to school design. Independent teaching is much more prevalent in type 2, and cooperative teaching in type 1 designs. Other items on teaching organisation indicated that timetabling of space, and grouping children by ability within the class/units were fairly widespread.

Responses to the questions on curriculum organisation show that, particularly at junior level (8-11 years old), organisation is dominated by the split day or 'skills and frills' approach. Here basics are covered in the mornings and art, creative activities, topic work etc... done in the afternoons. Two thirds of junior teachers claim to utilise this approach. Another quarter used an assignment system whereby work is assigned at the beginning of the day or week. Pupils may or may not be given some choice in the order they complete them. Others use a 'rolling timetable' where pupils are assigned a basic

curriculum consisting of a given number of activities. A simple example would be Maths, English, Creative work, Physical Education - Maths, English, Creativ· Work, Physical Education - Maths... Few favour a thematic approach where the curriculum is organised around topics or projects. About one teacher in ten adopts such an approach but few of these allow much pupil choice. There were few interactions between Curriculum organisation and school Design.

Although fairly general the questionnaire responses allowed a national picture to be built up, providing a skeleton on which to hang some observational flesh. At the observational stage the inevitable deliberations concerning the respective sizes of the institutional and behavioural samples led to a decision favouring the importance of the latter. It was felt necessary to spend three weeks in each school in order to gather the required data reliably and validly. One week was devoted to the observation of groups of pupils stratified by sex and ability, another to the recording of pupils days, and the third to the observation of use of space by teachers and pupils. In addition all teaching staff were interviewed.

The theoretical perspective which guided the observations was an adaptation of the Harnischfeger/Wiley model of teaching-learning processes (Bennett, 1978). For the purposes of this study curriculum allocation and pupil involvement were the major foci and two observational schedules were developed for this purpose, the Pupil Behaviour Schedule (PBS), and the Learning Experiences Schedule (LES). A use of space schedule was also designed to assess how space was being utilised.

Curriculum Allocation

The analyses reported here derive from the observations of 552 pupils of grade 2 (6-7 years old) and grade 4 (9-10 years old) level using the Pupil Behaviour Schedule. 24 children were observed in the week based on a time sampling technique. Each curriculum task or activity was recorded and later classified into seven broader Areas of Experience. These were Maths; Language; Environmental Studies (which included the traditional subject areas of History,

geography, science and nature study); Aesthetics (which included art and craft, and music); Physical Education; Social and Moral/Religious Education. In addition data were gathered on Administration and Transition i.e. the time taken up on administrative matters such as register time and money collection, and the time spent in transitional activities -moving to a new space, waiting, clearing up and so on. This definition of transition time is very similar to Gump's (1974) non substance time - 'the moves, the waits and holds, the getting organised sections of the environment which are not the official substance of school but which can consume much time and effort'.

Figure 4 presents the average percentage, and range of time per week spent in the Areas of Experience in both grade 2 and grade 4 units.

(Fig. 4, here)

On average most time is allocated to activities in the area of language at both grade levels although it is more pronounced in the lower grades as might be expected. Next comes Maths accounting for about 17% of the week and Aesthetics with about 10%. Time devoted to these two areas is very similar in the two grades but Environmental Studies and Physical Education occur more frequently in grade 4. Social and Moral Education take up little time.

Of interest is the large amount of time spent in transition. At grade 2 about one quarter of the week is taken up by such non curricular activities.

Gump argues that the percentage of transition time might be used as an index of operating efficiency. However more time is probably inevitable with smaller children, e.g. tying shoelaces after PE, and such activity is deemed useful by infant teachers who justify it in terms of manipulative skill training. Of interest is that transition time is higher in organisations which timetable space since in this arrangement teachers and children rotate around spaces.

The foregoing description is based on averages but the ranges give a much better indicator of the diversity in allocation. The ranges are wide and appear to increase with increasing pupil age, and because of the limited size these are likely to be narrower than in the population. Even so the variation in maths

allocation was from 2.5 to 6 hours per week; in Language from 4 to 12 hours a week; from zero to 7 hours in Environmental Studies and from half an hour to 6 hours per week in Aesthetics. If the specific curriculum activities rather than the broader Areas of Experience are considered the variation is enormous.

Clearly children are being offered very different educational diets in schools, indicating that in Britain at least there is no such thing as the primary school curriculum but a vast number of curricula each embodying a different balance. Figure 5 illustrates the different balance achieved in two of the units observed.

(Fig. 5, here).

Pupil involvement.

Curriculum allocation is conceived as the opportunity teachers provide for pupils to study a given curriculum content. Pupil involvement represents what pupils make of that opportunity. What proportion of the school day are pupils involved on curriculum activities? Table 1 summarises the results for both grade levels.

(Table 1, here).

Involvement appears higher among the older children but this masks the fact that the lower figure for the younger children is due to the increased transition time. Grade 2 children actually spend less time non-involved. Other analyses have established that involvement varies in the different areas of experience being lowest in Math and Language and highest in the 'doing' areas of Aesthetics and PE.

Although both allocation and involvement are of importance in their own right it is instructive to assess the combined effect as in table 2 below.

(Table 2, here).

Pupils in Unit A were allocated least time for mathematics - 138 minutes or just over $2\frac{1}{4}$ hours per week. This contrasts with the allocation in Units F and H where it amounts to $6\frac{1}{4}$ and $6\frac{2}{3}$ hours respectively. When involvement is taken into account actual working time on mathematics reduces to less than $1\frac{1}{2}$ hours per week for Unit A pupils or about 17 minutes per day. The

similarity of allocated time in units F and H turn into a considerable discrepancy on actual working time since pupils in unit H achieve a 90% involvement rate against less than 60% in Unit F. The former achieve an actual work time of nearly six hours a week compared with a little over 3½ hours a week in unit F. Pupils in unit H were thus involved on Mathematics for over 70 minutes a day compared to 17 minutes per day in unit A.

Allocation, Involvement and unit Design

The questionnaire data had indicated that the more closed type 2 designs were associated with more idependent teaching. The observational data showed few differences at grade 2 but quite large differences at grade 4 level. Here more emphasis was placed on language, environmental studies and aesthetics in the type 2 units. Transition time was slightly lower and pupil movement was of a different duration and frequency. Pupil involvement was slightly higher.

Architectural determinism should not be implied however. Architecture can certainly modify the teaching environment but it is the teachers who determine the curriculum and organisation. For example the link between design and pupil involvement does not appear to be related to the lack of shared teaching space per se but to the fact that many of the teachers had chosen a team teaching organisation in which each teacher was responsible for her specialism. A separate analysis established that pupil involvement was higher in such organisations.

Conclusion

As Berliner and Rosenshine (1976) point out the evidence would indicate that other things being equal one curriculum is intrinsically neither better nor worse than another but that different curricula result in different patterns of knowledge. The large variations found in curriculum allocation between units, and the marked differences in curriculum balance must therefore be a cause for concern. How can we justify one group of children receiving 4 hours a week language and others three times that amount?

Gross variations of this kind are not restricted to Open Plan Schools however.

Similar or wider variations have been found in a questionnaire survey of nearly 900 schools in NW England (Bennett, 1976); in interviews of 68 headteachers across Britain (Ashton et al, 1975), and from a recent interview study of 900 teachers in central eastern England (Bassey, 1977).

Large discrepancies in time allocation are therefore widespread as might be expected in an educational system where there is little central or local control of curriculum. However this is not a veiled suggestion that allocation should be standardised. To do so would imply that there is one best balance. Nevertheless teachers should be aware of the likely outcomes of differing balances and keep in mind that 'the pattern of time allocation to various subject areas and sub-areas is an important consideration when planning and implementing instruction' (Fisher et al, 1977). This is particularly necessary in an organisation allowing high pupil choice where some of the responsibility for balance is shared by the pupil.

The findings on pupil involvement can be interpreted in a number of ways. One might argue that pupils are involved for nearly two thirds of the week whereas another might complain that on the basis of these figures nine of the twenty five hours a week spent at school are devoted to non-curricula activities. It is of interest that some teachers manage to keep their pupils involved for 19 hours a week and others only 13, a gain of over one day per week. But equally there is likely to be an optimal level since nobody can maintain 100% involvement.

In the only published study carried out in Britain available for comparative purposes Boydell (1975) found that average involvement in six informal junior classrooms was 67% but these observations were carried out in maths lessons only and included no transition time. In the light of this limited evidence it would seem reasonable to suggest that open plan schools are little different in this respect.

The importance of pupil involvement is stressed by an increasing number of researchers and many studies have reported positive relationships with achievement (Bennett, 1978). But it is by no means a complete answer. Time, as Gage (1978) has recently pointed out, is an empty vessel. There is little to be served in keeping pupils involved on tasks or activities unless they are comprehensible and worthwhile. The quality of pupil activities and experiences has attracted little classroom based research but must be a priority for the future.

Finally the classification of school designs appears to have relevance and validity. Environment -- treatment interactions have been found with both questionnaire and observational data. From the former differences in teaching organisation and teacher preference were apparent and from the latter the differences in allocation, transition, involvement and patterns of movement and space use were noted. It would thus appear that differences in the size, type and orientation of space are important factors in relation to teacher and pupil behaviour. If research is to reach out and be useful to teachers in the school setting then due regard must be given to variations in physical environment.

Policy implications

These findings have obvious implications for policy at school level relating to decisions concerning curriculum balance, type of teaching organisation, use of available space and unit design. But this paper has only concentrated on the teaching process whereas the findings relating to the design and administrative process, not reported here, are likely to have a greater impact on policy.

The greatest problems occur at local authority level. The average educational adviser knows as much about architecture as the average architect knows about education. Inevitably this has led to poor communication, which, coupled with the unwillingness of both parties to systematically observe the practice they are supposed to be designing for, has caused inadequate briefing and the lack of a coherent school design policy.

Many schools have basic design flaws such as practical/wet areas necessarily used as major thoroughfares and badly sited quiet rooms, and the most prevalent design - two teacher type 2 - is paradoxically the one which teachers like least. These issues reflect the lack of adequate dialogue between architects and teachers and the widespread failure of architects to evaluate their buildings.

Problems at the interface of educators and architects is matched by those between administrators and teachers. Local education authorities have increasingly adopted open space schools because they are cheaper to build, but they have given little thought to the implications of this policy. Teacher training has still not caught up with the fact the open plan schools exist and inexperienced and ill-taught teachers are often thrust into schools with little

or no in-service provision either. The staffing policies in many authorities exacerbate this by appointing staff immediately prior to opening allowing no time for the discussion of school aims , organisation or policy.

These implications will be spelt out in our report to be published later this year. The system is clearly not working optimally and it is hoped that the relevant parties will consider the applicability of the findings to their own situation. What is then needed is a coordinated effort to achieve the common objectives of creating organisational and structural frameworks which will support optimal learning environments for children. But shouldn't this have been done ten years ago?

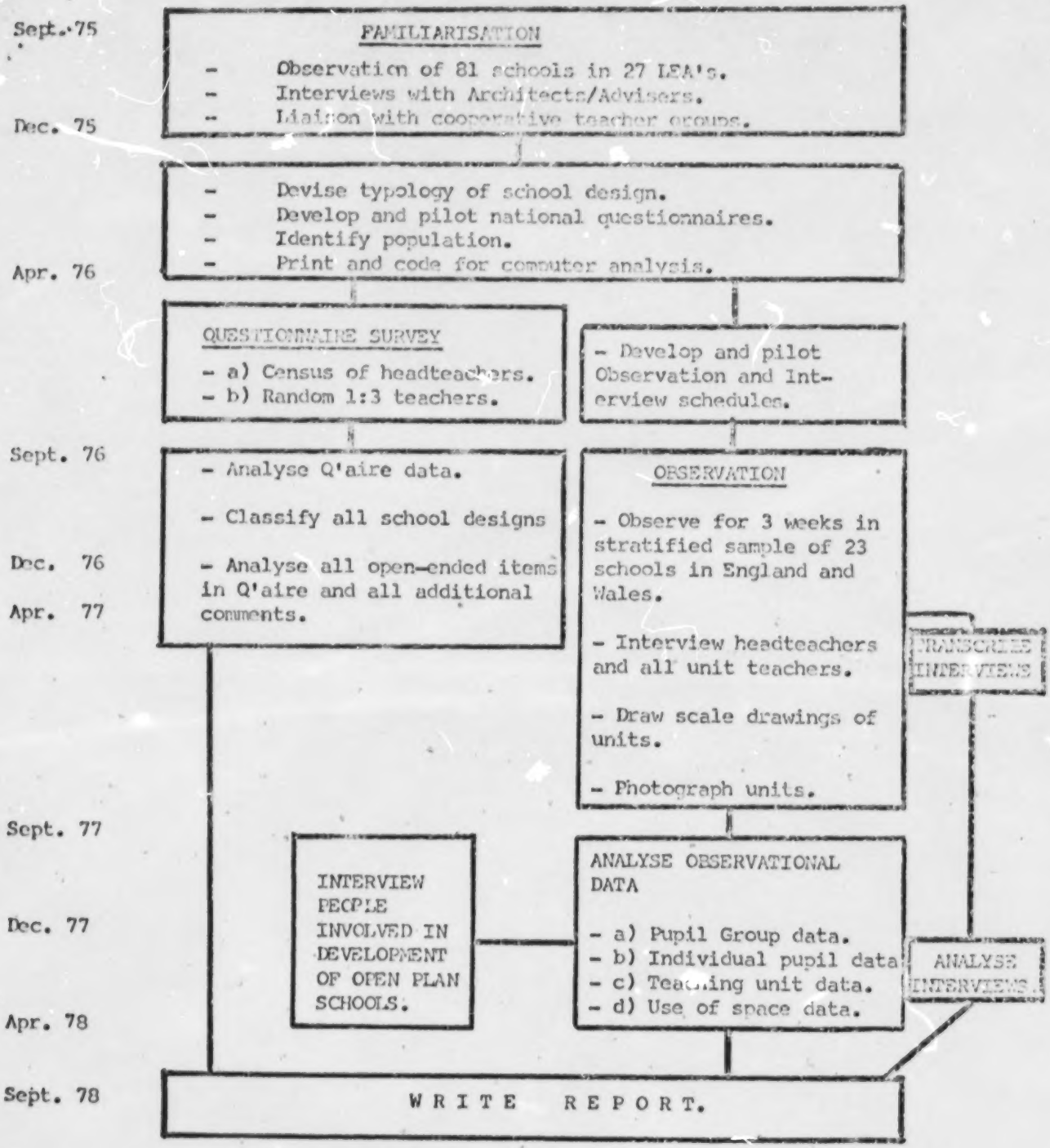
Sept. 75
FAMILIARISATION
- Observation of 81 schools in 27 LEA's.
- Interviews with Architects/Advisers.
- Liaison with cooperative teacher groups.
Dec. 75
- Devise typology of school design.
- Develop and pilot national questionnaires.
- Identify population.
- Print and code for computer analysis.
Apr. 76
QUESTIONNAIRE SURVEY
- a) Census of headteachers.
- b) Random 1:3 teachers.
- Develop and pilot Observation and Interview schedules.
Sept. 76
- Analyse Q'aire data.
- Classify all school designs
- Analyse all open-ended items in Q'aire and all additional comments.
OBSERVATION
- Observe for 3 weeks in stratified sample of 23 schools in England and Wales.
- Interview headteachers and all unit teachers.
- Draw scale drawings of units.
- Photograph units.
TRANSCRIBE INTERVIEWS
Dec. 76
Apr. 77
Sept. 77
INTERVIEW PEOPLE INVOLVED IN DEVELOPMENT OF OPEN PLAN SCHOOLS.
ANALYSE OBSERVATIONAL DATA
- a) Pupil Group data.
- b) Individual pupil data
- c) Teaching unit data.
- d) Use of space data.
ANALYSE INTERVIEWS
Dec. 77
Apr. 78
Sept. 78
WRITE REPORT.

FIG. 1. SIMPLIFIED RESEARCH DESIGN.

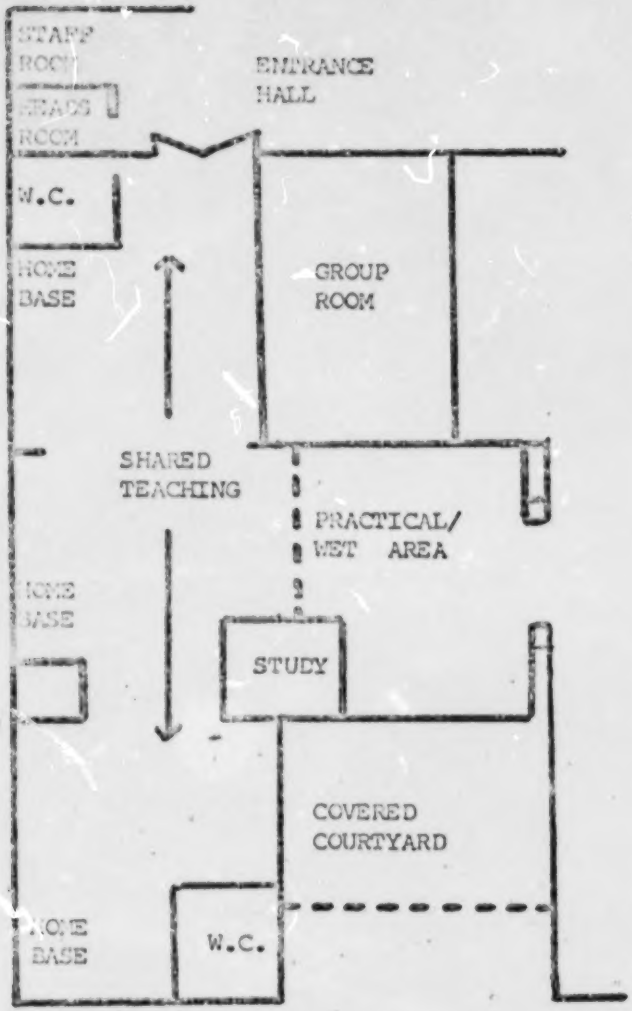

FIG.2. A THREE TEACHER TYPE 1 UNIT.

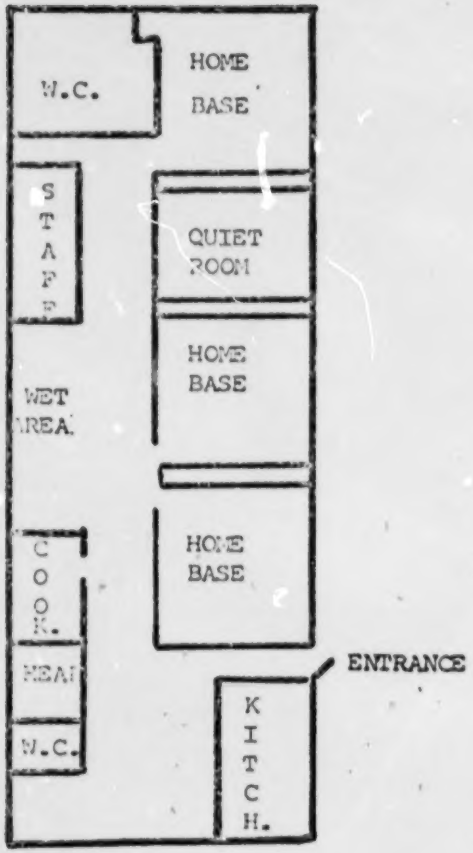

FIG. 3. A THREE TEACHER TYPE 2 UNIT.

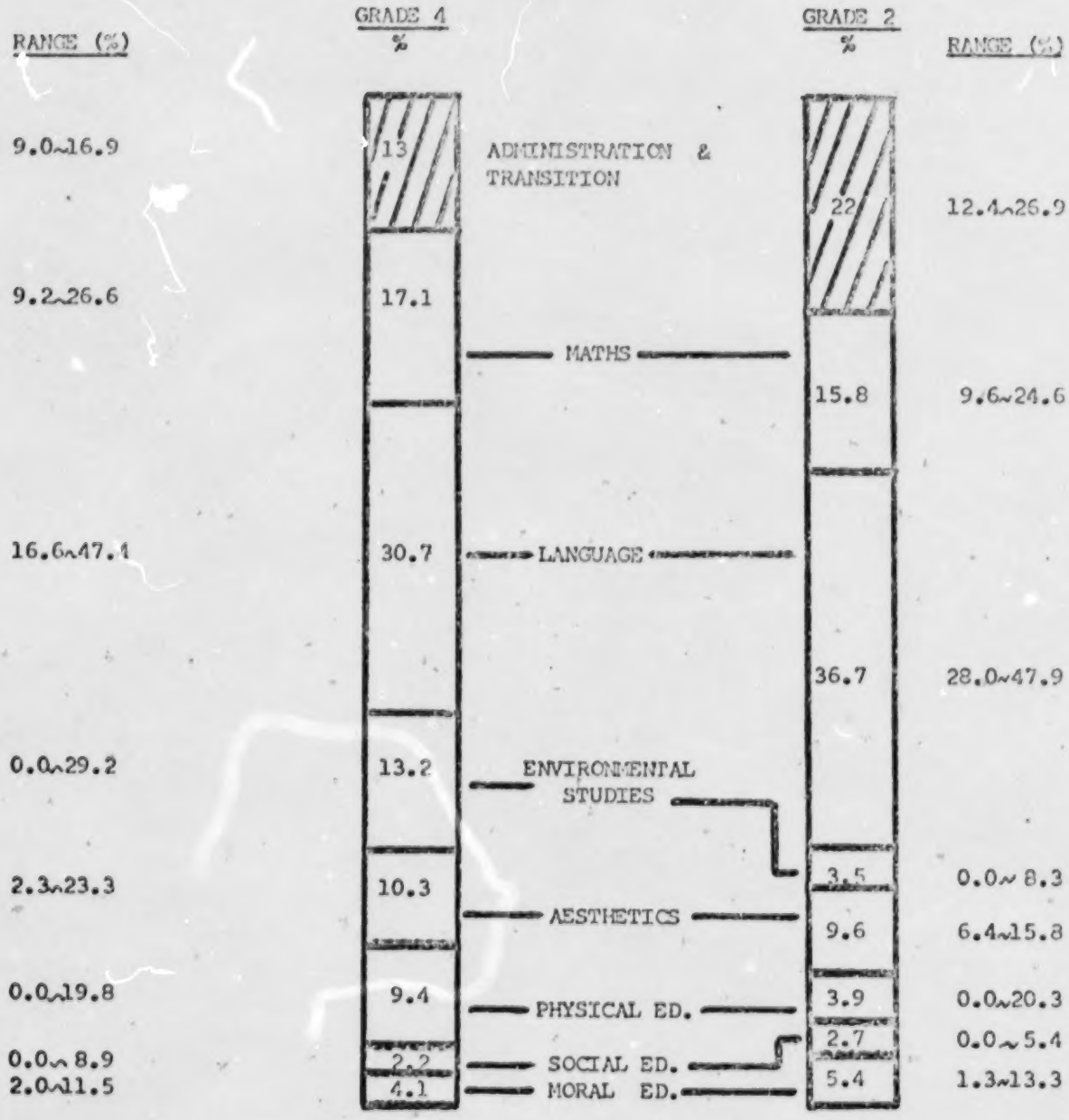

FIG.4 CURRICULUM ALLOCATION (MEANS & RANGE) IN GRADE 2 AND GRADE 4 UNITS.

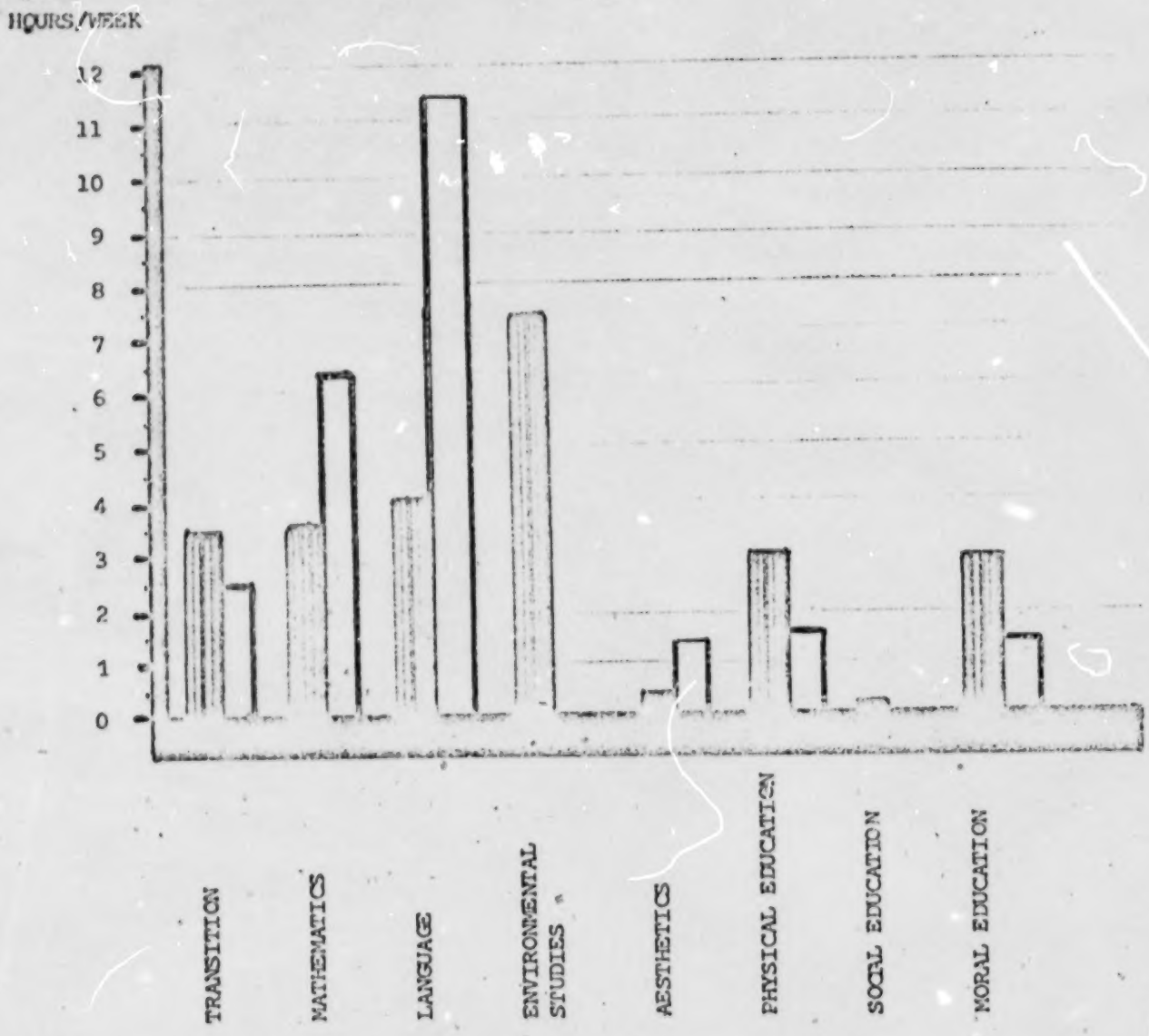

FIG.5. DIFFERENCES IN CURRICULUM BALANCE. TWO GRADE 4 UNITS.

		Grade 2	Grade 4
Involved	(Mean)	61	66
Involved	(Range)	53-70	58-75
Admin/Transition	(Mean)	22	13
Admin/Transition	(Range)	12-27	9-17
Not Involved		17	21

Table 1. Involvement at Grades 2 and 4 (% rounded)

Unit	Allocated		Involvement %	Actual (Mins)
	%	Number		
Unit F	25.0	375.0	58.4	219.0
Unit H	26.5	397.8	89.9	357.6
Unit A	9.2	138.0	62.6	86.4

Table 2. Comparison of Units F, H and H on Allocation and Involvement.

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